DOCUMENT RESUME

ED 360 492 CE 064 139

AUTHOR Burbridge, Lynn C.
TITLE New Economic Trends for Women's Employment: Implications for Girls' Vocational Education. Working Paper Series No. 247.
INSTITUTION Wellesley Coll., Mass. Center for Research on Women.
SPONS AGENCY American Association of Univ. Women Educational Foundation, Washington, D.C.
PUB DATE 92
NOTE 31p.
AVAILABLE FROM Publications Dept., Center for Research on Women, Wellesley College, Wellesley, MA 02181-8259.
PUB TYPE Information Analyses (070) -- Reports - Evaluative/Feasibility (142)

EDRS PRICE MF01 Plus Postage. PC Not Available from EDRS.
DESCRIPTORS Economic Climate; Educational Change; Educational Legislation; Educational Trends; *Education Work Relationship; *Employed Women; Employment Level; *Employment Patterns; Equal Opportunities (Jobs); Females; Futures (of Society); Nontraditional Occupations; *Outcomes of Education; *Program Effectiveness; Salary Wage Differentials; Secondary Education; Sex Discrimination; *Vocational Education
IDENTIFIERS Carl D Perkins Voc and Appl Techn Educ Act 1990

ABSTRACT

A literature review was conducted to determine the impact of secondary vocational education on females. Literature on the following topics was reviewed: women in the labor market (wages and occupations, the role of women's wages in family income, and the future labor market); the vocational education system (issues and problems in vocational education, occupational skills training, services to special groups, goals, and the 1990 Perkins Act amendments); and other proposals for a more formalized apprenticeship system for noncollege-bound youth and further integration of vocational-technical training in state and regional economic development efforts. Despite some evidence of declines in gender discrimination and despite the fact that women's wages have come to represent a larger proportion of total family income, established patterns of discrimination against women persist in the form of job segregation and wage discrimination. Although vocational education programs have had an impact on the employment and earnings of females, they have not succeeded in moving young women out of traditionally female occupations. Changes in this situation will depend largely on states' commitment to be more inclusive of women and minorities in vocational education (particularly in more technologically oriented fields). (MN)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

CE

ED 360 492

NEW ECONOMIC TRENDS FOR WOMEN'S EMPLOYMENT: IMPLICATIONS FOR GIRLS' VOCATIONAL EDUCATION

by Lynn C. Burbridge

CE 064139

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

This document has been reproduced as received from the person or organization originating it.

Minor changes have been made to improve reproduction quality.

Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

PERMISSION TO REPRODUCE THIS MATERIAL IN OTHER THAN PAPER COPY HAS BEEN GRANTED BY

L Burbridge

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)"

WORKING PAPER SERIES

Wellesley College
Wellesley, MA 02181-8259

1992

NO. 247

BEST COPY AVAILABLE

Research for this project was funded by the American Association of University Women Educational Foundation and Eastern Enterprises. All opinions expressed are those of the author, not of the funders or the Wellesley College Center for Research on Women.

Copyright © 1992 by Lynn C. Burbridge, Center for Research on Women, Wellesley College, Wellesley, MA 02181

The Wellesley College Center for Research on Women

The Wellesley College Center for Research on Women was founded in 1974 in the belief that research on and increased understanding of women's lives would lead to new possibilities for both women and men. Today it is one of the largest, as well as one of the oldest, centers for research on women in the United States. Researchers are funded by grants from federal, state and private agencies to work on a wide range of issues affecting the lives of women.

The purpose of Center research is to expand the body of knowledge about women in order to improve the range and quality of life opportunities for both women and men. All research and program activities at the Center grow out of--and benefit from--the experiences and perspectives of women.

The Center maintains an active publications program to ensure that the results of research studies reach policy makers in government, industry, education, and private life. The Working Papers Series makes available early reports of research and other work by Center staff and formal affiliates. A special group of papers focuses expressly on curriculum change.

A booklet describing papers currently available may be requested from the

Publications Department
Center for Research on Women
Wellesley College
Wellesley, MA 02181-8259
(617) 283-2510 Fax (617) 283-2504

Abstract

This paper reviews the literature on the effectiveness of secondary-level vocational education programs, with an emphasis on the impact of these programs on girls and young women. It finds that while vocational programs have had an impact on the employment and earnings of females, they have not moved young women out of traditionally-female occupations. The paper also discusses recent changes in vocational education legislation and the implication of these changes on girls and young women. Proposals for more extensive changes vocational education--such as a more formalized apprenticeship system--are also considered in regards to their effect on women and minorities.

I. INTRODUCTION

In recent years the vocational education system has been under increasing scrutiny. While largely a state-driven system, vocational education receives considerable support from the federal government and thus has been vulnerable to concerns expressed about many federal programs: whether tax dollars are being spent effectively and efficiently and whether special groups targeted in the federal legislation are being served. Superimposed on these concerns, is a recognition that the U.S. economy has undergone major restructuring in the past twenty years causing many to rethink the skill requirements for the future labor market. As a result, the entire system of education, including vocational education, has been examined and criticized in relation to its ability to meet the needs of business in the modern world. The extent to which academic and vocational schools are to blame for this crisis of confidence in the education system is a subject of debate. It may be, as economist Robert Reich has written, that the problem is not that schools have changed for the worse, but they "simply had not changed for the better" in light of macroeconomic trends.[1]

Throughout the discussion of education reform in the past ten years, little attention has focused on girls and young women either in terms of the current education problems they face or in terms of how education reform measures may help or hurt them. This has been extensively documented in a recent report prepared by the Center for Research on Women for the American Association of University Women, The AAUW Report: How Schools Shortchange Girls.[2] Fortunately, because of continuing efforts to make sex equity a priority in vocational education more research attention has focused on gender issues in this program than other federally-funded programs. For example, the research team for the AAUW Report found surprisingly little data on participation and outcomes for girls in compensatory and bilingual education programs which receive considerable federal support. Nevertheless, changes in the economy and in vocational education make this an opportune time to reexamine the effect of vocational education programs on girls and young women and give consideration to how recent reforms or proposed reforms may affect them.

The first part of this report gives an overview of labor market issues relevant to young women. Since vocational education--more so than any other education program--is designed to prepare young people for the labor market, this section provides an important context for subsequent discussion. The next section reviews the research on

---

[1]. Robert B. Reich, The Work of Nations: Preparing Ourselves for 21st Century Capitalism, (New York: Alfred A. Knopf, 1991), page 226.

[2]. Center for Research on Women, The AAUW Report: How Schools Shortchange Girls, (Washington, D.C.: American Association of University Women, 1992).

the outcomes from vocational education and summarizes the new law that was enacted to change the system. This is followed by a discussion of other possible scenarios proposed for vocational education such as calls for a more formalized apprenticeship system and greater integration of vocational education in economic development efforts, and how economic restructuring may effect the need for occupational skills training. The last section provides a summary and conclusion.

II. WOMEN IN THE LABOR MARKET: AN OVERVIEW

Wages and Occupations

Women earn less than men. They are also found to be more concentrated in particular occupations than are men. These patterns persist in spite of educational gains made by women in recent decades and affect professional and non-professional women alike.

As indicated in Table 1, women make considerably less money than men, even when controlling for education and when focusing on full-time, year-round workers. Women with eight years or less education make 66 percent of what similar men make; women with five or more years of college make 69 percent of what similar men make.

Women also experience extreme occupational segregation. Table 2 shows the concentration of women in certain occupations (column 2) and the percent of the female labor force that is represented by certain occupations. Detailed breakdowns are presented for selected major occupations to show the sex segregation that occurs within major occupational groups. For example, while many have noted the gains women have made in professional specialty occupations (45 percent in this category are women), women predominate in four professional sub-categories: health processing (nurses, dieticians, pharmacists, and so on), elementary and secondary teaching, counselors and librarians. Only three occupations contain women in proportion to their representation in the labor market: social, recreation and religious workers, social scientists, writers and artists. And the remaining professional fields are predominately male. Altogether, over 60 percent of professional women are in female-intensive professional fields.

Almost 60 percent of the entire female labor force are in administrative support, sales, and service occupations. While these fields encompass a variety of opportunities for women, most are low-paying jobs. As can be seen from the second column in Table

Table 1. Median Annual Income
Year-Round, Full-time Workers, 25 Years and Older
By Years of School Completed and Sex, 1988

Schooling	Women	Men	Female/Male Ratio
Eight years or less	$11,358	$17,190	.66
One to three years of high school	$13,104	$20,777	.63
Four years of high school	$16,810	$26,045	.65
One to three years of college	$20,845	$30,129	.69
Four years of college	$25,187	$36,434	.69
Five or more years of college	$30,136	$43,938	.69

Source: U.S. Department of Education, Office of Educational Research and Improvement, Digest of Education Statistics, 1990, Table 344.

Table 2. Occupation of Employed Civilians By Sex, Race and Hispanic Origin, 1988

	Total Employed (1,000)	Female Percent of Total	Percent of Total Female
Total	**114,968**	**45.0**	**100.00**
Managerial and professional specialty	**29,190**	**44.7**	**25.22**
Executive, administrative and managerial	14,216	39.3	10.80
Professional specialty	14,974	49.8	14.41
Architects	143	14.6	.04
Engineers	1,805	7.3	.25
Math and computer scientists	732	33.4	.47
Natural scientists	395	24.1	.18
Physicians and dentists	818	18.2	.29
Nurses, dieticians, pharmacists, therapists, physicians assistants	2,154	84.9	3.53
College and university teachers	700	38.5	.52
Teachers, except college and university	3,773	72.9	5.32
Counselors	206	61.8	.25
Librarians	219	82.6	.35
Social scientists and urban planners	343	47.6	.32
Social, recreation, and religious workers	1,052	46.1	.94
Lawyers and judges	757	19.5	.29
Writers, artists, entertainers and athletes	1,855	46.7	1.67
Technical, sales and administrative support	**35,532**	**64.8**	**44.50**
Technicians and related support	3,521	47.9	3.26
Health technologists and technicians	1,226	82.6	1.96
Engineering and related technologists	930	18.9	.34
Science technicians	216	31.1	.01
Other technicians	1,149	37.7	.84
Sales occupations	13,747	48.9	12.99
Administrative support	18,264	80.1	28.28
Service occupations	**15,332**	**60.5**	**17.93**
Precision production, craft, and repair	**13,664**	**8.7**	**2.30**
Operators, fabricators, and laborers	**17,814**	**25.7**	**8.85**
Machine operators, assemblers and inspectors	8,117	40.8	6.40
Transportation and material moving occupations	4,831	9.0	.84
Handlers, equipment cleaners, helpers, and laborers	4,866	17.2	1.62
Farming, forestry, fishing	**3,437**	**16.3**	**1.08**

Source: U.S. Department of Commerce, Bureau of the Census, Statistical Abstract of the United States, 1990, (Washington, D.C.: U.S. Government Printing Office, 1990).

2 these are female-intensive fields: women represent 80 and 60 percent respectively of all administrative support and service workers.

Relatively few women are in blue collar occupations and those that are, are also concentrated in certain fields; they are more likely to be machine operators than craft workers or transportation workers. Not only does the former pay less, there are within-occupation sex differences: female machine operators make considerably less money than male machine operators ($236 per week compared to $366 for men).[3]

One argument given to explain these facts is that women have been tracked into certain jobs because of discrimination. This "crowding" of women into a relatively small number of fields results in a depression of productivity and wages in these fields.[4]

Another argument is that women have chosen certain occupations based upon their current and anticipated investments in education, training, and work experience. According to this view women want less-demanding occupations that tend to offer lower wages, given their current or planned child-bearing and family responsibilities.[5]

Occupational segregation, for whatever reason it occurs, does not entirely explain male-female wage differences, however. One study found that occupational segregation only accounts for between 11 percent to 40 percent of the male-female wage gap.[6] There are also significant within-occupation wage differences that may reflect differences in education and work experience, but that also reflect wage discrimination against women.

Several studies have attempted to "de-compose" the wage differential between men and women and to determine which portion of this difference can be attributable to education, experience, and personal characteristics. Between 20 to 45 percent of the male-female wage gap has been attributed to these factors, suggesting that some

---

[3]. U. S. Department of Commerce, Bureau of the Census, Statistical Abstract of the United States, 1990, (Washington, D.C.: U.S. Government Printing Office, 1990.)

[4]. Barbara Bergmann, "Occupational Segregation Wages and Profits When Employers Discriminate by Race or Sex," in Alice Amaden, ed., The Economics of Women and Work, (New York: St Martin's Press, 1980).

[5]. Soloman William Polocheck, "Occupational Segregation Among Women: Theory, Evidence, and Prognosis," in Cynthia B. Lloyd et al., eds, Women in the Labor Market (New York: Columbia University Press, 1979); June O'Neill, "The Determinants of Wage Effects of Occupational Segregation," (Washington, D.C.: the Urban Institute, 1983).

[6]. Donald Treiman and Heidi Hartmann, eds., Women, Work and Wages: Equal Pay for Jobs of Equal Value, (Washington, D.C.: National Academy of Sciences Press, 1981).

"unexplained" variable -- such as discrimination -- determines the rest.[7] Studies that have incorporated job characteristics were able to explain from 75 to 90 percent of the wage differential although there are still differences of opinion as to whether women have "chosen" to work in particular kinds of jobs or were forced into them because of discrimination.[8]

Thus while education is important, particularly as an explanation for the low representation of women in many technical fields, studies find that education and previous labor market experience are not sufficient to explain the low wages of women. It has been more difficult to determine the extent to which discrimination versus the "preferences" of women are an explanation, given the difficulties in measuring these two variables. In addition, since the labor market status of women has changed over time, it has been difficult to determine whether the experiences of younger women will be the same as older women.

A recent study by Elaine Sorenson has found decreases in the male/female wage gap that cannot be attributed to personal characteristics or structural changes, suggesting that there may have been reductions in sex discrimination in the last decade.[9] Unfortunately, Sorenson also found that black women have not shared in these gains for "unexplained" reasons, suggesting increases in racial discrimination in recent years. This represents a reversal in past trends for black women who experienced dramatic growth in earnings since 1950. But this wage growth primarily reflected the shift of black women from the low-wage services, particularly private household services, to the low-wage, female-intensive administrative support occupations that are and have been dominated by white women.

Among those black women who have not completed high school, service work still dominates. Sixty percent of black women without a high school diploma are in service

---

[7]. Jacob Mincer and Soloman Polochek, "Family Investments in Human Capital: Earnings of Women," in Alice Amaden, ed., The Economics of Women and Work, (New York: St. Martin's Press, 1980); Mary E. Cocoran, "Work Experience, Labor Force Withdrawals, and Women's Wages: Empirical Results Using the 1976 Panel of Income Dynamics," in Cynthia B. Lloyd et al., eds. Women in the Labor Market, (New York: Columbia University Press, 1979).

[8]. Reuben Gronau, "Sex-Related Wage Differentials and Women's Interrupted Labor Careers--the Chicken or the Egg," Working Paper No. 1002, (Cambridge: National Bureau of Economic Research, 1982); June O'Neill, "The Determinants of Wage Effects."

[9]. Elaine Sorenson, "Why the Gender Gap Declined in the 1980s," prepared for the U.S. Department of Labor Women's Bureau, November 1991.

occupations, compared to 33 percent of similar white women, 18 percent of their black male counterparts, and ten percent of white men without high school diplomas. An analysis of detailed occupations indicates even greater segregation among black women. Forty-one percent of black women in service occupations can be found in only four jobs: chambermaids, welfare service aides, cleaners, and nurse's aides.[10] Thus, dropping out of high school severely limits the opportunities of minority women in the wider context of limited occupational choice for all women.

Role of Women's Wages in Family Income

While decreases in discrimination may explain some of the recent decline in the male/female wage gap, overall male earnings have stagnated since 1973, and black male wages have declined, as a result of structural changes in the economy, including the loss of many high-paying, male-dominated manufacturing jobs.[11] Because of the slowdown in male wages the earnings of women have come to represent an increasing proportion of family income. As indicated in Table 3, a wife's earnings now represents fifty percent of black family income, 40 percent of Hispanic family income, and 35 percent of white family income. Married couples where both husband and wife are working have the highest incomes and it is only among this group that the earnings of blacks and Hispanic families even approach the earnings of white families.

Families most in jeopardy of poverty are those headed by women, particularly minority women. Since women's wages are lower than men's and single-parent families do not benefit from two incomes, child poverty rates are very high in female-headed households: 47 percent for whites and 72 percent for blacks.

Education plays an important role in reducing poverty among children. As indicated in Table 4, childhood poverty is virtually guaranteed in single-parent families headed by a woman without a high school diploma: 87 percent for blacks and 77 percent for whites. Thus limited education not only lowers opportunities for women, but

---

[10]. Julianne Malveaux, "The Economic Status of Black Families," in Harriet Pipes McAdoo, ed., Black Families, (Newbury Park: Sage Publications, 1988).

[11]. These changes and the policy response to them are discussed in Bennett Harrison and Barry Bluestone, The Great U-Turn: Corporate Restructuring and the Polarizing of America, (New York: Basic Books, 1988).

Table 3. Median Income of Families by Race or Hispanic Origin and Family Type: 1988

	Black	Hispanic	White	B/W Ratio	H/W Ratio
Married Couple Families:	$30,385	$25,667	$36,840	82.5	69.7
Wife not in paid labor force	18,515	19,117	27,958	66.2	68.4
Wife in paid labor force	36,709	31,864	43,182	85.0	73.8
Wife's Contribution	18,194	12,747	15,224	119.5	83.7
(percent of family income)	(49.6)	(40.0)	(35.3)	(140.5)	(113.3)
Male Householder, No Wife Present	17,853	21,937	28,935	61.7	75.8
Female Householder, No Husband Present	10,657	10,687	17,672	60.3	60.5

Source: U. S. Department of Commerce, Bureau of the Census, Statistical Abstract of the United States: 1990, (Washington, D.C.: U.S. Government Printing Office, 1990)

Table 4. Child Poverty Rates by Family Type, Race, and Education: 1982-1983

	Black	White	B/W Ratio
Married-couple Families	20.9	11.3	1.85
Father's education only:			
Failed to complete high school	39.6	29.0	1.37
Completed high school	13.1	7.3	1.79
High school diploma only	17.5	10.1	1.73
Completed some college	6.9	4.8	1.44
Father and mother's educaton:			
Neither completed high school	44.9	36.8	1.22
Only mother completed high school	32.8	18.6	1.76
Only father completed high school	29.7	18.6	1.60
Both completed high school	11.1	6.2	1.79
Single female-headed families	71.5	47.4	1.51
Mother's education:			
Failed to complete high school	86.8	76.8	1.13
Completed high school	61.6	34.4	1.79
High school diploma only	67.6	41.0	1.65
Completed some college	47.3	22.7	2.08

Source: Committee on Ways and Means, U.S. House of Representatives, Overview of Entitlement Programs: 1990 Green Book, (Washington, D.C.: U.S. Government Printing Office, 1990)

jeopardizes the well-being of their children as well. Given the increase in the number and percentage of women who are single parents and the growing importance of women's wages to total family income, the increased educational attainment of women has repercussions for children, families and society as a whole.

The Future Labor Market

In spite of the contribution made by women, declines in U.S. productivity and competition from abroad may make the baby-boom generation the first American generation to be less well off than their parents.[12] Thus, the education of all U.S. citizens -- male and female, white and nonwhite -- has become an important issue in national efforts to keep the country competitive and improve the well-being of the American family.

The debate on the future of education is inextricably linked to the debate on the future of the U.S. economy. Workforce 2000, the influential study funded by the U.S. Department of Labor suggests that future labor shortages and increased demand for high-skilled labor may provide a window of opportunity for women and minorities to achieve greater economic mobility, provided that they have the necessary education and training.[13] Others have challenged this optimistic picture noting that while women and minorities will represent a significant proportion of labor market entrants, white males will continue to hold a significant share of all jobs.[14] Further, it is argued that while the fastest growing occupations will require high skills, many of the occupations creating the greatest number of jobs will be low-skilled service occupations. This is because many of the fast growing occupations currently employ relatively small numbers of people; even with rapid growth, only a small segment of the labor market will be affected.

Bureau of Labor Statistics projections appear to support the view that low-paying jobs may be adding more jobs than high paying ones.[15] Service occupations will add more jobs than any other major occupation; three-fourths of this growth will be among

---

[12]. See Frank Levy, Dollars and Dreams: The Changing American Income Distribution, (New York: W.W. Norton and Company, 1987).

[13]. William B. Johnston and Arnold H. Packer, Workforce 2000: Work and Workers for the 21st Century, (Indianapolis: Hudson Institute, 1987).

[14]. Lawrence Mishel and Ruy A. Teixeira, "The Myth of the Coming Labor Shortage: Jobs, Skills, and Incomes of America's Workforce 2000," (Washington, D.C.: Economic Policy Institute, 1990.)

[15]. For example, see U.S. Department of Labor, Bureau of Labor Statistics, Outlook 2000,

food preparation and service, health service, and cleaning and building service occupations. These are traditionally low-paying occupations. Administrative support occupations are expected to grow more slowly. Thus, the least well paying of the female-intensive fields will exhibit the greatest growth; suggesting limited opportunities for low-income and minority women to find upward mobility.

Also expected to grow more slowly are male-intensive craft and operative jobs. Thus, while many women are exploring the possibilities of working in these traditionally-male fields, they will probably encounter stiff competition from male workers who are also being squeezed by slowdowns in growth.

There is no reason to assume, however, that policies cannot be developed -- including education policies -- that will expand the country's economic potential and increase the available pool of high-paying jobs. The National Center on Education and the Economy argue that while the future U.S. economy may not necessarily require more skilled labor, it may prove unhealthy for the well-being of the country in the long run to rely too heavily on low-wage work.[16] Their concern is the increasing disadvantage this country faces with respect to many of our competitors which require high educational standards, provide "professionalized" education to non-college-bound students, provide comprehensive training systems, and provide incentives to business to upgrade skills and to redesign the organization of work to make use of skilled workers. The report makes several proposals to establish national standards for education and training, and to provide incentives to business to implement changes in training and work organization.

The concerns of this report and others have important implications for education policy. Already the trend has been to increase the use of performance standards, such as those being implemented in vocational and compensatory education. The changes made in vocational education are discussed in greater detail in the next chapter which also reviews the literature on the impact of past vocational programs on girls and women.

---

[16]. Commission on the Skills of the American Workforce, America's Choice: High Skills or Low Wages, (Rochester, New York: National Center on Education and the Economy, 1990).

III. THE VOCATIONAL EDUCATION SYSTEM

History

With the passage of the Smith-Hughes Act of 1917, the federal government first began to play a role in the development of a national system of vocational education. Although some states already had vocational programs, this legislation stimulated other states to initiate similar programs.[17] Since 1917 the United States has had a continuing role in supporting vocational education, although the states have provided the majority of funding.

In the 1960's significant changes were made in federal policy, targeting resources on specific population groups such as the academically and economically disadvantaged, the emotionally and physically disabled, and so on.[18] Federal funding was significantly increased to pay for these changes. Then with Title IX of the Education Amendments of 1972 attention was given to discrimination by sex in education programs.

But it was not until Title II of the Education Amendments of 1976 that specific requirements were placed on state vocational agencies regarding sex equity. Title II required all states to hire full-time personnel (usually referred to as sex equity coordinator) to work towards the elimination of sex discrimination and sex stereotyping in vocational programs; to ensure that women's concerns were represented on state advisory councils for vocational education; include in their state plans policies and procedures for insuring equal access to vocational education; insure compliance with state policies to eradicate sex discrimination; and evaluate vocational services to women. The legislation also required states to develop programs for displaced homemakers, single heads of households, persons who were involuntarily working part-time, and those interested in nontraditional jobs. States could also provide services such as child care and in-service training to assist staff to overcome sex bias. Under the Carl D. Perkins Vocational Education Act of 1984, an 8.5 percent set-aside of federal funds was provided single-parent and displaced homemaker programs and a 3.5 percent set aside was provided for a sex equity program.[19]

---

[17]. For a more complete history of vocational education see Louise Vetter, "The Vocational Option for Women," in Sharon L. Harlan and Ronnie J. Steinberg, eds., Job Training for Women: The Promise and Limits of Public Policies.

[18]. The Vocational Education Act of 1963 and The Vocational Amendments of 1968 focused on defining special groups to be served and providing funding "set-asides" for specific programs for specific groups.

[19]. Both set asides were to be administered by the sex equity coordinator.

In spite of these specific requirements, federal law permitted considerable state-by-state variation in the kinds of vocational programs they operated. For example, The National Assessment of Vocational Education (NAVE) found that the distribution of federal funds among secondary and post-secondary vocational education varied widely (from 8 to 100 percent of funding going to post-secondary vocational education).[20] In addition, it was not clear that the goals set out in the legislation were being met for a variety of reasons. As a result of the on-going debate about the role of vocational education, the Carl D. Perkins Vocational and Applied Technology Education Act Amendments were enacted in 1990.

Issues and Problems in Vocational Education

Vocational education was initially designed to prepare non-college-bound high school students -- mostly males -- for the labor market. Although vocational courses were also designed for girls and women, they initially focused on home economics. As labor market opportunities for women expanded, they also came to predominate in vocational courses in health and office occupations. In recent years, however, various concerns have been expressed about the vocational system: that it has not accomplished it original goal of providing occupational skills that are transferable to the labor market; that it has not achieved subsequent goals to provide adequate services to groups disadvantaged because of discrimination, education, or income; and that these goals themselves were ill-designed, poorly implemented, and no longer reflect the realities of the labor market.

Occupational Skills Training

Many feel that the vocational system has failed to train both men and women; men because the training has had little impact on their overall earnings and women because they have been routed into sex-stereotyped jobs. Studies of the impact of secondary vocational education have found little or no impact of training on the wages of male program participants, although research indicates that those boys who do obtain training in high school are more likely to work longer hours (and, therefore, earn more on an annual basis) and report greater job satisfaction.[21]

---

[20]. Discussion of the National Assessment of Vocational Education (NAVE) is taken from John G. Wirt, Lana D. Muraskin, David A. Goodwin, and Robert H. Meyer, Summary of Findings and Recommendations: National Assessment of Vocational Education, 1989.

[21]. See Jeanne Desy, Paul Campbell, and John A. Gardner, High School vocational Education Experiences: in School and in the Labor Market, (Columbus, Ohio: The National Center for Research in Vocational Education, 1984); J.T. Grasso and J.R. Shea,

These same studies find significant effects of vocational training on females, in terms of wages and hours worked. In spite of significant effects for women, virtually all of these gains are found for women in sex-stereotyped jobs, particularly those in office and business occupations.[22] Further, some studies have found that these gains primarily reflect increased hours worked rather than increased wages. [23] An analysis of the distribution of girls and women in different vocational courses of study indicates little change in sex segregated patterns, in spite of the fact that girls and women are now more likely to take vocational courses and are more likely to concentrate in vocational education programs.[24]

There are some important caveats to be made about these findings, however. First, larger impacts are found for those who have obtained training-related jobs, particularly males. Unfortunately, only 50-60 percent of those with vocational education end up in jobs related to their training, resulting in a finding of small overall impacts.[25] Second, there is some evidence that well-designed vocational programs have other

---

Vocational Education and Training: Impact on Youth, (Berkeley CA: The Carnegie Council on Policy Studies in Higher Education, 1979); Russell W. Rumberger and Thomas N. Daymont, The Economic Value of Academic and Vocational Training Acquired in High School, (Stanford, CA: Institute for Research on Educational Finance and Governance, 1982).

[22]. Paul Campbell, Karen S. Basinger, Mary Beth Dauner, and Marie A. Parks, Outcome of Vocational Education for Women, Minorities, the Handicapped and the Poor, (Columbus, Ohio: The National Center for Research in Vocational Education, 1986)

[23]. Robert H. Meyer, "An Economic Analysis of High School Vocational Education: The Labor Market Effects of Vocational Education," (Washington, D.C.: The Urban Institute, 1981); John Gardner, "Influences of the High School Curriculum on Determinants of Labor Market Experiences," (Columbus, Ohio: The National Center for Research in Vocational Education, 1984).

[24]. See Wirt, et al., The National Assessment of Vocational Education and Vetter, "The Vocational Education Option." Robert Meyer notes in his study, however, that if home economics is excluded, there is no gender differences in participation in vocational education: Robert H. Meyer, "An Economic analysis of High School Vocational Education," (Washington, D.C.: The Urban Institute, 1981).

[25]. Gardner, "Influence of the High School Curriculum" and Wirt, et al., The National Assessment of Vocational Education.

impacts such as reducing high school drop out rates.[26] Third, most studies are conducted with national data, obscuring what exemplary programs have been able to accomplish. These results are "average" results.

The importance of finding training-related jobs point to the critical role played by labor market conditions in explaining these findings. There has been a tremendous expansion in job opportunities in office, clerical, and service occupations that are traditionally female and declines in job opportunities in trade and industry that are traditionally male. Thus, it is not surprising that women have come to invest more in vocational training and to have benefitted from their training to a greater extent than males. Studies have found that women are more likely to find jobs in occupations for which they have been trained than are men.[27]

Nevertheless, women have clearly encountered discrimination in the pursuit of non-traditional fields. Studies have shown that women trained in traditionally-male jobs are less likely to be employed and earn lower wages than men receiving the same training.[28] One demonstration program conducted by Public/Private Ventures, Ventures in Community Improvement, trained disadvantaged 16-19 year old young women in non-traditional jobs and found that participants were no more likely than non-participants to find employment and stay off welfare. Those participants who did find employment, however, had higher earnings than non-participants.[29] The program was beneficial for those able to find jobs.

In addition, Kane and Frazee found that sixty-five percent of female high school students in nontraditional courses reported harassment by male classmates and by some

---

[26]. U.S. Department of Education, Office of Vocational and Adult Education, Combining School and Work: Options in High Schools and Two-Year Colleges, March 1991.

[27]. Campbell, et al., Outcomes of Vocational Education.

[28]. Lou A. Hargrave, William Frazier, and Tom Thomas, Comprehensive Analysis of Follow-up Data for Students Enrolled in Traditional And Nontraditional Vocational and Technical Programs, Oklahoma State Department of Vocational and Technical Education, 1983; Irmtraud Streker-Seeborg, Michael C. Seeborg, and Abera Zegeye, "The Impact of Nontraditional Training on the Occupational Attainment of Women," The Journal of Human Resources, Volume 19, Number 4.

[29]. Public/Private Ventures, Training Women in Non-traditional Jobs, Women in VICI, Final Report on the Demonstration, (Philadelphia, PA: Public/Private Ventures, 1987).

teachers.[30] Those familiar with these programs emphasize the importance of establishing mentor relationships and support groups for non-traditional students to help them handle the stresses they encounter. Close ties between programs and businesses also help ease the transition.[31]

Nevertheless, while vocational education has not helped in moving many women out of relatively low-paying office jobs into higher paying occupations dominated by men, it may have permitted many women who otherwise would be confined to the even lower-paying service occupations to find higher status office and business jobs.[32] Some studies indicate that the effect of vocational training on minority women is not as strong as it is for white women, however.[33] Studies also indicate that minorities are less likely to enroll in vocational education when controlling for socioeconomic status, suggesting that they may have lower expectations from vocational training than similar whites.[34] Certainly, in spite of the ability of some exemplary programs to reduce dropouts, overall vocational education has been found unsuccessful in retarding dropout rates for some groups; such as Puerto Rican youth who have been shown to have higher drop-out rates in vocational programs than in general or academic programs.[35]

In assessing all of these studies, however, it is important to remember that the follow-up periods used are relatively short. Most examine program impacts two to eight years after high school graduation. It is entirely possible that effects of training may be greater or lesser as time goes on. The latter is particularly likely for women and

---

[30]. Roslyn D. Kane and Pamela E Frazee, Women in Nontraditional Vocational Education in Secondary Schools, (Arlington, VA: Rj Associates, Inc. 1978) as reported in Vetter, "The Vocational Education Option."

[31]. Richard D. Lakes, Preparing Students for Nontraditional Career Fields, presented at the National Alliance for Partnerships in Equity Conference, April 1991.

[32]. For a discussion of this see Lynn C. Burbridge "Black Women in Employment and Training Programs," in Margaret Simms and Julianne Malveaux, Slipping Through the Cracks: The Status of Black Women, (New Brunswick, New Jersey: Transaction Books, 1986).

[33]. For example, see Rumberger and Daymont, "The Economic Value of Academic and Vocational Training" and Grasso and Shea, "Vocational Education and Training."

[34]. See Campbell, et al., "Outcomes of Vocational Education."

[35]. See Thomas B. Hoffer, "Retention of Hispanic American High School Youth," in T. McKenna and F. Ortiz, eds., The Broken Web: The Educational Experience of Hispanic American Women, (Berkeley, CA: Floricanto Press, 1988).

minorities if they are more likely to be in occupations with few opportunities for advancement.

Services to Special Groups

As the preceding discussion suggests, the vocational system has not been very successful in moving girls and women into nontraditional jobs. This is not surprising, given the findings of the NAVE study that relatively few resources were devoted to sex equity programs.[36] According to this study, sex equity grants were distributed to a relatively small number of districts and, even then, tended to be very small. The study reported a certain amount of cynicism among administrators about efforts to achieve sex equity.

Similarly, the NAVE report found that funding for single parents and displaced homemakers were provided to a small number of districts (not necessarily those where the need was greatest), were very small (the median award being about $8,000), and were expended most often for counseling or ancillary services. This corresponds to the findings that NAVE reports for other special groups targeted by the Perkins Act: grants tended to be small and were used primarily to provide services rather than to upgrade institutions in low-income areas.

In addition, NAVE found that students in disadvantaged schools were 40 percent less likely to have access to an area vocational school and had access to 40 percent fewer vocational courses that students in other districts. Finally, the study reports that handicapped and academically-disadvantaged girls were more likely to be trained for low-level service jobs than other girls, although no such difference existed between handicapped and academically-disadvantaged boys in comparison to all other boys in vocational education.

Further, there are few role models for women and minorities outside of a narrow range of occupational fields. Within the secondary schools, women teachers are concentrated in health (83%), occupational home economics (92%), office occupations (64%), and consumer and homemaking (96%); they have low representation in fields such as agriculture (6%), technical occupations (12%), trade and industry (9%), and industrial arts (4%).[37] Minority teachers are concentrated in home economics (15%), office occupations (12%), homemaking (12%), and industrial arts.

---

[36]. Wirt, et al., National Assessment of Vocational Education.

[37]. National Center for Education Statistics, "Sex and Racial/Ethnic Characteristics of Full-Time Vocational Education Instructional Staff," Report Number: NCES-82-207B.

Thus, in spite of the targets placed on special groups, the National Assessment of Vocational Education indicates that states did little more than was minimally required by federal legislation. As indicated in the previous section, the labor market may have played a greater role than federal policy in influencing outcomes of vocational training on various groups in the society. Because of concerns about the performance of vocational education and about changes in the labor market, some have expressed concerns that the goals of vocational education need to be reexamined and redesigned.

Goals

Recently, there have been many critics of the overall goals of vocational education. Some have echoed the concerns of Larry Rosenstock, executive director of occupational education at Cambridge Rindge and Latin School and a lecturer at the Harvard Graduate School of Education:

> "given the speed of technological change, a focus on narrow training provides students with soon-to-be obsolete occupational skills...[I]t is absurd to base our system of vocational and technical training on the choices 15-year-olds make about what they want to do for 'the rest of their lives.' This premise was conceived as a response to the last industrial revolution, but it is hardly appropriate today." [38]

But if specific training should no longer be the goal of vocational training, what should be? Rosenstock feels that vocational training should teach vocational students the same concepts academically-oriented students learn, except in a different setting. Conceptual and critical thinking, creativity, and other learning skills should be taught in vocational programs as a complement rather than as an alternative to academic training. These broader skills are what will be required in the future labor market, instead of specific occupational skills.

Results from various studies suggest that a broader focus would be in order. First, after several years of growth in the 60's and 70's, there have been declines in participation in vocational education -- particularly in trade and industry occupations. One explanation for this is that more young people are pursuing higher education, recognizing the limited opportunities available to those relying on specific occupational training.[39] Others argue that vocational education has been a casualty of the education reform movement: as more schools have added academic requirements to meet the

---

[38]. Larry Rosenstock, "The Walls Come Down: The Overdue Reunification of Vocational and Academic Education," Phi Delta Kappan, February 1991.

[39]. Kenneth Gray, "Vocational Education in High School: A Modern Phoenix?" Phi Delta Kappan, February 1991.

demand for "excellence" in education there has been less time for vocational courses.[40] As noted earlier, studies have also shown that a minority of those receiving vocational training actually find employment in skilled, training-related jobs.[41]

Nevertheless, a broad range of students participate in vocational courses on the secondary level, including students pursuing academic programs. Vocational education has not only been a program for non-college-bound students: in 1982 college-bound high school graduates took an average of 2.04 credits in vocational education compared to an average of 3.77 for vocational graduates.[42] Thus, it is perhaps inappropriate to regard vocational training as a program just for non-academically oriented students anymore. While those concentrating in a vocational program are less likely to attend college, students clearly are not viewing vocational courses as antithetical to more academic goals.

Academic students may be taking vocational courses for a variety of reasons: for fun, for the experience, or to complement their other studies. For example, it was found that college- bound students were able to increase their math proficiency 1.7 points by taking vocational courses offering applied mathematics.[43] This may have implications for girls and minorities who do less well learning mathematics in a traditional school environment. There are indications that girls learn math better when a "hands-on" approach is used as opposed to lectures.[44]

In addition, there is some evidence that access to vocational education may help prevent some students from dropping out of high school, suggesting that it may assist in keeping at-risk students interested in school.[45] Vetter reports that one vocational program designed to help pregnant or parenting students graduate from high school had

---

[40]. Senta A. Raizen, "Reforming Education for Work: A Cognitive Science Perspective," (Berkeley, CA: National Center for Research in Vocational Education, 1989).

[41]. Wirt, et al., National Assessment of Vocational Education.

[42]. Wirt, et al., National Assessment of Vocational Education.

[43]. Study cited in Wirt, et al., National Assessment of Vocational Education.

[44]. Center for Research on Women, The AAUW Report.

[45]. Donna M. Mertens, Patricia Seitz and Sterling Cox, Vocational Education and the High School Dropout, (Columbus, Ohio: National Center for Research in Vocational Education, 1982).

an 88 percent success rate, high by anyone's standards.[46] Drop-out prevention will vary with the quality of the program, however; some vocational programs have been characterized as "dumping grounds" for disadvantaged students with little impact on school retention.[47]

Thus, many have felt that the time has come to recognize that the vocational system must have a broader mandate than originally conceived. For vocationally-oriented students, it must provide the general skills needed for a rapidly-changing labor market; for academically-oriented students it can complement and enhance their academic programs; and it can be used as part of a strategy to keep at-risk students in high school. The challenge may be to create a system that is flexible enough to achieve these ends, while providing the rigor demanded to establish it as a credible system of education. These are some of the concerns that motivated a major restructuring in vocational education in the 1990 amendments to the Perkins Vocational Education Act.

The New Law

The 1990 amendments to the Carl Perkins Act list two goals for the use of federal funds: (1) to integrate vocational and academic training and to broaden vocational students' experience to include all aspects of an industry (planning, management, finance, technical and production skills); and (2) to provide special groups -- the economically disadvantaged, students with disabilities, students with limited English, and females in nontraditional programs -- with services needed to ensure their full participation in vocational education.

In order to accomplish these goals, the funding structure of the legislation has been changed. First, the funding formula is designed to ensure that federal funds go to areas with the highest percentage of poor and disadvantaged students. The formula ensures that there is greater local leadership; most funds pass through the states to the local areas. Like the Job Training Partnership Act program, states will be able to monitor local programs by establishing performance standards. Separate funding streams were established for secondary and post-secondary education, ensuring that a minimum amount of federal funds go into each of these areas. Further, minimum-sized grants were established to go to local programs.

It is still too soon to tell, however, whether the new legislation will result in significant changes in vocational education and how it will affect girls and young women. The vocational system will still rely predominately on state funding and thus will

---

[46]. Vetter, "The Vocational Education Option."

[47]. Hoffer, "Retention of Hispanic American High School Youth."

predominately reflect state priorities. State plans have already been criticized for being woefully inadequate in showing how the needs of special populations will be met.[48]

Further, the idea of integrating academic and vocational education -- while very appealing -- will have to be operationalized by local administrators; it may take many years before successful program models are developed and tested. Some encouragement can be found in the model implemented by the Rindge School of Technical Arts in Cambridge, Massachusetts.[49] It is a four-year program integrating academic and vocational skills where students learn a variety of occupational skills, analyze the needs of their city while developing maps and scale models of key areas in the city, and eventually engage in city planning and economic development activities. The proportion of female students in their program increased from 5 to 30 percent, indicating a keen interest on the part of young women in a more holistic approach to occupational training and industrial arts.

The new funding formula also suggests that girls in disadvantaged areas may soon have access to more adequately funded programs. Since low-income and minority women have the most restricted labor market opportunities, the new legislation may improve their opportunities for training and education. A study by the Project on Equal Rights (PEER) indicates that women of color have taken the lead in seeking training in traditionally-male jobs, indicating a clear interest in higher-paying, nontraditional fields.[50]

Finally, a policy change emphasizing the enhancement of academic skills and which also de-emphasizes specific occupational training, may provide young women with the skills needed to obtain higher-paying jobs in many fields. But in the absence of concerted efforts to encourage young women to take the appropriate courses and to place them into jobs or post-secondary institutions requiring the skills learned in these courses, any training they receive may have little affect on their labor market opportunities.

Given changes that are underway, continuing research on program outcomes and the extent to which goals are met is clearly needed. Any future examination of the

---

[48]. Center for Law and Education, Inc., "Vocational Education: A New Opportunity for Educational and Community Change," NEWSNOTES, No. 43, December, 1991.

[49]. Center for Law and Education, "Cambridge: Vocational Education As City-Building," NEWSNOTES, No. 43, December 1991.

[50]. Project on Equal Rights, "The 1986 PEER Report Card: A State-by-State Survey of the Status of Women and Girls in America's Schools," Policy Paper no. 5, (Washington, D.C.: PEER, 1986).

effectiveness of vocational education for girls and young women will have to focus on the following areas:

(1) What program initiatives were developed on the local level in light of changes in federal policy? Did they incorporate concerns for race and sex equity?

(2) Are there differences in the kinds of training girls receive relative to boys, whites relative to nonwhites? If so, what are the reasons for this?

(3) What are the outcomes of the programs developed in response to the new legislation in terms of academic skills attainment, employment and earnings, and enrollment in higher education? Are there differences by race and sex?

(4) What monitoring activities are being developed to ensure equal access by race and sex? For example, will the performance standards developed by the states reflect concerns for ensuring that targeted groups receive appropriate services?

(5) Will the new system be substantively and qualitatively different than the old one? If so, what are the overall implications for girls and minorities?

IV. OTHER SCENARIOS

In addition to recent changes in legislation, there have been calls for a more formalized apprenticeship system for non-college-bound youth and further integration of vocational and technical training in economic development efforts (particularly on the state or regional level).[51] The first represents a concern that insufficient attention has been paid to the training needs of non-college-bound youth as articulated in the William

---

[51]. For a discussion, see Robert I. Lerman and Hillard Pouncy, "The Compelling Case for Youth Apprenticeship," The Public Interest, No 101, Fall 1990, pp. 62-77; W. Norton Grubb and David Stern, "Separating the Wheat from the Chaff: The Role of Vocational Education in Economic Development," (Berkeley, CA: National Center for Research in Vocational Education, 1989).

T. Grant Foundation's The Forgotten Half.[52] Apprenticeship has also been posed as a formal mechanism for providing greater access to jobs for minority youngsters.[53]

That vocational education should be integrated in economic development goals is not a new idea; the purpose of vocational programs being to prepare young people for business. But many states are more formally coordinating vocational and training programs with economic development planning, in some cases directly subsidizing the training of workers for new businesses that locate in their region.[54]

Many of these proposals and initiatives reflect what many Western European countries are already doing. The German apprenticeship model in particular has been cited as a superior mechanism for insuring that non-academic young people are adequately trained.[55] Western European governments have also been more active in coordinating the activities of business, labor, and education in their economic development efforts.

Since the norms and customs of Western Europe regarding the role of the government in social planning are very different than those in the U.S., some argue that it would be impossible to replicate the German apprenticeship system in the U.S. The German system has also been criticized for tracking students at too early an age and unnecessarily restricting their choices.[56] Since many students in the U.S. are already "tracked" because their race, sex or socioeconomic status--often encountering severe limits to their educational opportunities--questions have been raised about whether this tracking should be formalized in an apprenticeship system. Further, some have argued that European countries are abandoning apprenticeship systems or revising them to make them more academically oriented.[57]

---

[52]. William T. Grant Foundation Commission on Work, Family and Citizenship, The Forgotten Half: Non-College Youth In America, (Washington, D.C.: W.T. Grant Foundation, 1988).

[53]. Lerman and Pouncy, "The Compelling Case."

[54]. Grubb and Stern, "Separating the Wheat from the Chaff."

[55]. Lerman and Pouncy, "The Compelling Case"; William E. Nothdurft and Jobs for the Future, "Youth Apprenticehsip, American Style: A Strategy for Expanding School and Career Opportunities, (Washington, D.C.: Consortium on Youth Apprenticeship, 1990); U.S. Department of Education, "Combining School and Work".

[56]. U.S. Department of Education, "Combining School and Work."

[57]. Raizen, "Reforming Education for Work."

In none of these discussion, it should be noted, has there been any significant discussion of the impact of these initiatives on girls and women. On the one hand, if these initiatives would require greater government intervention in the development of an apprenticeship system or in coordinating training and economic development and if the government is committed to affirmative action, such efforts could be beneficial. On the other hand, if such efforts limit choices or formalize existing barriers to entry into some occupations, it could prove damaging. Further, since many women concentrate on their families early in life and pursue careers later, any system that would lock youth into their earlier choices would be particularly harmful to women.

Nevertheless, economic forces may play an important role in determining how the training system may change. In a recent book, Piore and Sabel take as a fait accompli the flight of manufacturing based on mass production from the developed countries.[58] They argue that a focus on flexible specialization in production--a craft-oriented style of production geared towards specialized markets--will be to the advantage of the Western, industrialized countries. The system of flexible specialization has many of the elements discussed in this paper: it would rely on some formalized mechanism for training and entry into a field (apprenticeship system); it would require highly-trained workers with general as well as specific skills (integrating academic and vocational training); and it would be based on the development of integrated regional communities that invest in some form of industrial planning.

Robert Reich presents a more pessimistic scenario.[59] He also sees the flight of mass production to developing countries as a continuing process, but feels that it will result in a further diminution of the status of production workers in the U.S. who, along with in-person service workers, will be at the bottom of society in terms of wealth and income (although these two groups will represent the majority of Americans). He argues that high status jobs will go to those he refers to as symbolic analysts: those who engage in problem-solving, problem identifying, and strategic-brokering. These will be the organizers and interpreters of the global economy. They will identify less and less with any place, country, or community, their primary identification being with others who are like them. While he acknowledges that production workers and in-service production workers can bring symbolic-analytic or strategic brokering skills into their jobs and thus enhance their work, the scenario that he seems to see developing is of an increasingly enriched, internationally-oriented class of symbolic analysts and increasingly impoverished class of production workers and in-person service workers. He emphasizes the need to expand access to academic education and the expansion of the social welfare system to ensure that as many as possible can become symbolic analysts and to ensure the well-being of those who do not.

---

[58]. Michael J. Piore and Charles F. Sabel, The Second Industrial Divide, (New York: Basic Books,1984).

[59]. Robert Reich, The Work of Nations.

These scenarios have interesting implications for women and minorities. If there is a resurgence of craft production, the making of occupational choices early in life may become extremely important, with possible negative impacts on women. Further, craft production has traditionally been based on erecting strong barriers to entry, which can prove harmful to excluded workers. Access to "old boy networks" and nepotism may become increasingly important, locking out those lacking entry to these networks. Thus, with all the appeal of this model, it would present possible problems for minorities and women without the existence of government policies ensuring equal opportunity.

Access to networks would also play a role in Reich's model. He notes that only those who can attend the finest educational institutions in the country receive the training needed to become symbolic analysts. Plus success as a strategic broker requires the necessary contacts and networks. Reich feels that women, and to a lesser extent minorities, have made some gains as symbolic analysts. Among production workers, Reich sees significant reductions in male-female wage differentials as a result of the loss of "good," male-dominated production jobs and the devaluation of production work. Thus, men and women will become "equal" at a lower level.

Only time will tell which of these scenarios will predominate, if either does. Much will depend on the political response to restructuring. The ideas put forward by these authors, are food for thought, however.

V. SUMMARY AND CONCLUSION

This paper has drawn together many different threads. It has examined the current status of women in the labor market who have faced continuing discrimination in the form of job segregation or wage discrimination. There is some evidence of declines in gender discrimination, however, and womens' wages have come to represent a larger proportion of total family income as male wages have stagnated as a result of economic restructuring. For black women, however, reversals have been found in the progress made in earlier decades; and because economic restructuring and possible increases in discrimination have resulted in declines in black male incomes, black families are under increasing financial stress. Whatever gains women make in the future will be highly dependent upon access to a quality education. Only college-education women (working full-time) earn more than $25,000 a year and female high school dropouts and their families are virtually assured of a life in poverty.

The importance of economic restructuring can be seen in the performance of vocational education programs. Women in vocational education are more likely to find training-related employment, because of the increased demand for administrative support

and service workers, while men who have primarily been trained in industrial arts are less likely to find training-related employment and show lower returns to vocational education on average. Women have been stymied in their attempts to enter traditionally male fields, however, because of discrimination and difficulties in competing with men for a declining number of manufacturing jobs.

New vocational education legislation has emphasized integrating vocational and academic education in response to concerns that jobs of the future will require a more skilled and more flexible workforce. It also reaffirmed the government's commitment to the inclusion of special populations in vocational education programs: minorities, the handicapped, and women in non-traditional fields. How the new law will affect girls and women is difficult to say, but there are indications that they will be responsive to a broader conceptualization of occupational training. Much, in the end, will depend on the commitment of states to be more inclusive of women and minorities in vocational education, particularly in the more technological fields.

There have also been calls to develop a more formalized apprenticeship system and to integrate vocational education more closely in economic development efforts, as has been the case in many Western European countries. The effect such proposals, if implemented, would have on girls and women may depend largely on the government's commitment to affirmative action.

But whether these proposals make sense at all depends, in part, on the course of economic restructuring and the country's response to it. If the movement of production is towards more flexible specialization and craft-oriented production, a more developed and integrated vocational/apprenticeship system and greater coordination between training and government economic development efforts may be a logical consequence.

If production jobs are diminishing in value in Western societies and if only those with highly-developed academic skills will receive high returns to their education, then vocational or apprenticeship systems will also diminish in value. It is important to emphasize, however, that nothing is written in stone: the availability of a highly-skilled population of craft workers can motivate the development of a craft-oriented society.[60] As pointed out by Piore and Sabel, one needs to be wary of technological determinist arguments since at any given time several technological paths may be available to a society at any given time.[61]

Under either of these scenarios the outcomes for minorities and women will depend upon a variety of factors. Where education and employment opportunities rest heavily on choices made early in life or on one's position in life in early childhood or on

---

[60]. Nothdurft and Jobs for the Future, Youth Apprenticeship, American Style.

[61]. Piore and Sabel, The Second Industrial Divide.

one's access to "old boy networks," women and minorities will not do well without the assistance of public policy. Government has an important role to play in insuring that access to education and jobs is inclusive. The route taken by the government will, in turn, depend on the political response of excluded groups.

But for these responses to be effective they must be based on knowledge of how the world is changing. This calls for research on many of the issues posed in this paper. How are women and minorities faring in light of economic restructuring? What are the implications for education, including vocational education? How appropriate is the public policy response? What directions do we as a society want to go that will expand opportunities for all and build a more shared sense of community? How do we get there?